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## PATENT SPECIFICATION

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## (54) SANITARY GARMENT

(71) We, COURTAULDS LIMITED, a British Company of 18, Hanover Square, London W1A 2BB, England, do hereby declare the invention, for which we pray that a Patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following Statement:-

This invention relates to sanitary garments for incontinent persons, particularly geriatric and other invalids who are more or less immobile. Hitherto the sanitary garments usually provided for such persons have been scaled-up versions of infants' diapers, the designs of which do not always appear to have taken into account the comfort of the wearer.

It is known to provide a pants type of garment with a detachably mounted absorbent pad having an impermeable intermediate layer or outer surface for protecting the garment and bed linen or outerwear from soiling. It is also known for the garment itself to have releasable fastenings at the sides, such as the hook and plush pile fabric strips which are well known by the Registered Trade Mark 'Velcro', so that the garment can be opened out for convenience in changing the pad. The pads have been attached to the garments by loops, press fasteners or adhesive. In the main these garments have been bulky and uncomfortable, and particularly inconvenient for those persons able to wear normal outerwear.

According to this invention, a sanitary garment for use with a detachable absorbent pad comprises a central generally oblong rectangular piece of substantially non-stretchable fabric of length such as to extend from the waist at the back of the wearer under the crotch to the waist at the front, side pieces of two-way stretchable elastic fabric shaped to co-operate, when the garment is worn, so as to cover the hip areas of the wearer and secured to the side edges of

the central piece with end edges aligned with the end edges of the latter, elastic waist band portions secured along the end edges of the central and side pieces and releasable fastenings for connecting the side pieces in co-operating relation.

The elastic side pieces of this garment when connected in co-operating relation by the fastenings, provide a snug fit on the body of the wearer and hold the central piece taut against the absorbent pad, holding the latter comfortably in position with minimal bulkiness.

The substantially non-stretchable piece is particularly convenient for use with an absorbent pad having an adhesive back since the adhesive bonds are not ruptured in wear by stretching of the fabric.

Preferably the side pieces are so shaped; being relatively narrow at the front of the garment and sufficiently wide at the back to extend round the hips of the wearer to the front; that the releasable fastenings will connect them in co-operating relation on the front of the abdomen of the wearer. The widths are preferably such that in co-operating relation the side pieces overlap. The degree of overlap required will naturally depend upon the girth of the wearer and the amount of tension in the side pieces that provides optimum comfort for the wearer, and the fastenings are accordingly preferably arranged to connect the side pieces with a variable degree of overlap. The preferred fastenings which provide this facility are complementary pieces of hook and pile plush fabrics, such as the aforementioned 'Velcro', secured to the faces of the side pieces which confront when in co-operating relation, which can be superimposed to give just the right degree of tension in the side pieces and enable the garment to be used for wearers of a range of sizes and with absorbent pads of varying bulk, according to the needs of the wearer.

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Preferably the side pieces extend throughout the side edges of the central piece so as to encircle completely the thighs of the wearer, their outer edges being appropriately shaped to provide a snug fit and being finished with elastic trimmings.

Subsidiary fastenings, preferably also 'Velcro' strips, are preferably provided at the ends of these trimmings and of the waist band portions.

An embodiment of the invention is illustrated by way of example by the accompanying drawings in which:

Figure 1 is a plan of a sanitary garment in opened-out condition, and

Figure 2 is a diagrammatic perspective view showing the arrangement of the garment in wear, partly unfastened.

Figure 1 shows the outside of the garment, the upper part being the rear. The garment comprises rear and front panels 1 and 2 joined by a narrow crotch part 3. The opposite end edges of the panels 1 and 2 have elastic edge trimmings 4, 5 which together form a waist band when the garment is worn. The front panel 2 is of width somewhat less than half the girth of the intended wearer, and the rear panel 1 of somewhat greater width so that in wear its side edges can be brought round the hips of the wearer to overlap the side edges of the front panel 2. The appropriate surfaces near the side edges of the panels 1 and 2 carry complementary strips 6, 7 of plush and hook pile fabric strips so that the overlapped edges can be fastened together. The strips 6 of plush pile fabric on the outer surfaces of the side edge parts of the rear panel 1 are of substantially greater width than the complementary strips 7 of hook pile fabric on the inner surfaces of the side edge parts of the front panel 2 to provide for adjustability of the position in which they are superimposed to fasten the garment. Subsidiary fastening strips 8, 9 are fixed along the extremities of the waist band edge trimmings 4, 5, the extremities of the trimming 5 being extended beyond the edges of the panel fabric to increase the possible degree of overlap, which is similarly adjustable. The strips 8 on the outer surfaces of the rear elastic edge trimming 4 are of hook pile fabric and the complementary strips 9 of plush pile fabric are on the inner surfaces of the extended extremities of the front elastic edge trimming 5.

The side edges of the crotch part 3 are suitably contoured to embrace the thighs of a wearer and are also provided with elastic edge trimmings 10 which encircle the thighs when the garment is worn. The extremities of these trimmings also carry complementary strips 11, 12 of hook and plush pile fabrics to complete the fastening means of the garment, which is thus fully adjustable to

fasten comfortably and snugly around the waist, lower abdomen and thighs of a wearer, as shown in Figure 2.

The garment is constructed from an oblong rectangular central piece 13 of non-stretchable or rigid fabric, such as a woven fabric of synthetic continuous filament yarns, extending between the elastic edge trimmings 4 and 5 to form the centre parts of the rear and front panels 1, 2 and the crotch part 3. This central piece 13 is joined at its side edges by flat seams to front and rear side pieces 14, 15 of two-way stretchable elastic fabric which form the side portions of the rear and front panels and the crotch part, where they are joined in end-to-end relation with flat seams 16. To provide adequate elasticity this fabric is a lightweight knitted fabric of the kind commonly used in corsetry, and known as 'power net', comprising courses of a spandex yarn or filament and courses of textured nylon or other synthetic continuous filament yarn.

It will be understood that the side pieces 14 and 15 could be formed as an integral piece of fabric on each side of the central piece, omitting the seam 16, but the construction shown is preferred for fabric economy. In other constructions the front and rear side pieces need not extend through the crotch part 3, but in all constructions the end edges are aligned with those of the central piece to receive the edge trimming waist band portions 4, 5.

The garment is used with an elongate absorbent pad 17 (shown in outline only in Figure 1) tapering from a wide rear portion to cover the buttocks of the wearer to a width to fit comfortably within the crotch part 3 of the garment, and may widen again to the front part. A suitable pad comprises an impervious backing sheet, such as polyethylene film, a number of layers of suitable absorbent wadding material and an upper comfort layer such as a non-woven fabric formed from polypropylene fibres. The edges of the backing sheet are preferably folded over the wadding material to form a trough-like container for urine, and the edges of the comfort layer overlap them and are secured for example by welding or adhesive. To secure the pad in position in the garment its back sheet may have on its outside surface a contact adhesive, preferably in spots or discrete spaced areas, covered by a release paper or like protective layer. The adhesive should be of sufficient strength to adhere to the central piece 13 of the garment so as to remain in position in wear, but weak enough to be stripped out of the garment without damaging the fabric or tear the backing sheet. Such adhesives are well-known.

By using a central piece of rigid fabric the adhesive bond between the backing sheet of

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the pad and the garment will not be destroyed in wear, and the pad will remain in position regardless of the movements of the wearer. At the same time, the elastic fabric of the side pieces 14, 15 keeps the rigid fabric taut and holds the whole garment snugly in contact with the body of the wearer. The tension in the fabric and in the waist and thigh bands can be regulated by the wearer when superimposing the strips of hook and pile plush fabric to give optimum comfort. Creasing of any part of the garment can thus be kept to a minimum, and the bulk of the garment is likewise minimal in keeping with its functional purpose. The use of lightweight two-way stretch fabric at the sides, and the arrangement of the side pieces 15 of the rear panel 1 to extend around the hips of the wearer, confining the fastenings to the front of the abdomen, enables outer garments to fit closely and smoothly over the hips of the wearer without the presence of the sanitary undergarment being detectable, a matter of importance in improving the morale of patients afflicted with incontinence, particularly younger patients.

**WHAT WE CLAIM IS:-**

1. A sanitary garment for use with a detachable absorbent pad comprising a central generally oblong rectangular piece of substantially non-stretchable fabric of length such as to extend from the waist at the back of a wearer under the crotch to the waist at the front, side pieces of two-way stretchable elastic fabric shaped to co-operate, when the garment is worn so as to cover the hip areas of the wearer and secured to the side edges of the central piece with end edges aligned with the end edges of the latter, elastic waist band portions secured along the end edges of the central and side pieces and releasable fastenings for connecting the side pieces in co-operating relation.
2. A sanitary garment as claimed in

claim 1 wherein the side pieces extend throughout the side edges of the central pieces.

3. A sanitary garment as claimed in claim 1 or claim 2 wherein the side pieces are so shaped that the releasable fastenings will connect them in co-operating relation on the front of the abdomen of the wearer. 50

4. A sanitary garment as claimed in any preceding claim wherein the widths of the side pieces are such that their side edges overlap when in co-operating relation, the releasable fastenings being arranged to connect them with different degrees of overlap according to the girth of the wearer. 55

5. A sanitary garment as claimed in claim 4 wherein the releasable fastenings comprise complementary pieces of hook and pile plush fabric secured respectively to the faces of the side pieces which confront when the side pieces are overlapped in co-operating relation. 60

6. A sanitary garment as claimed in any preceding claim including subsidiary fastening means adjacent the ends of the waist band portions. 70

7. A sanitary garment as claimed in any preceding claim including elastic edge trimmings to encircle the thighs of the wearer and subsidiary fastening means adjacent the ends of the trimmings for securing them when the garment is worn. 75

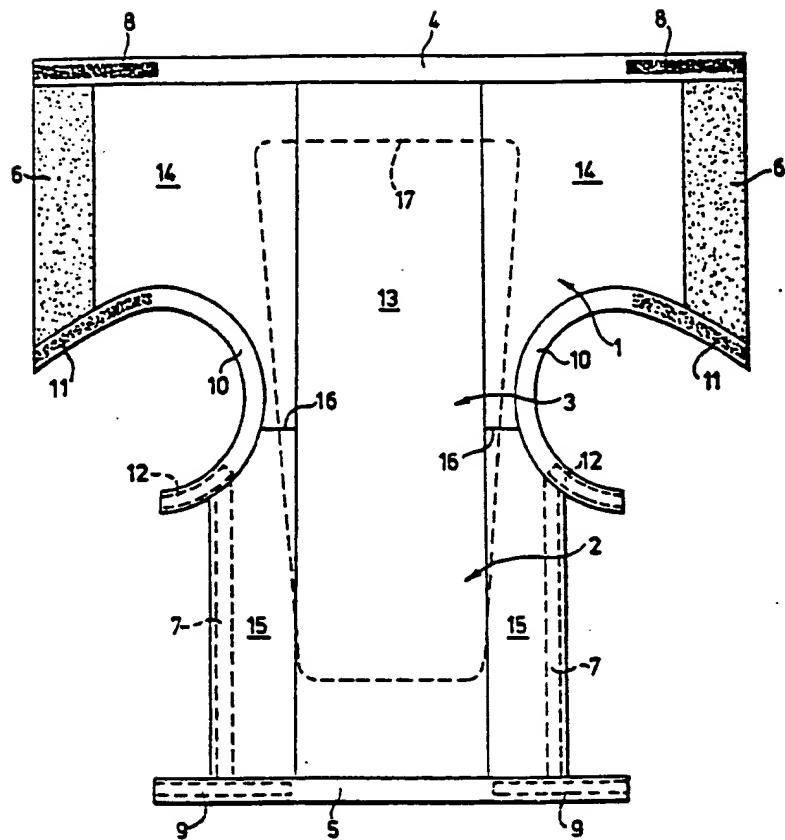
8. A sanitary garment as claimed in claim 6 or claim 7 wherein the subsidiary fastening means comprises complementary strips of hook and plush pile fabric. 80

9. A sanitary garment substantially as described with reference to and as illustrated by the accompanying drawings.

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Fig.1.



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Fig.2.

